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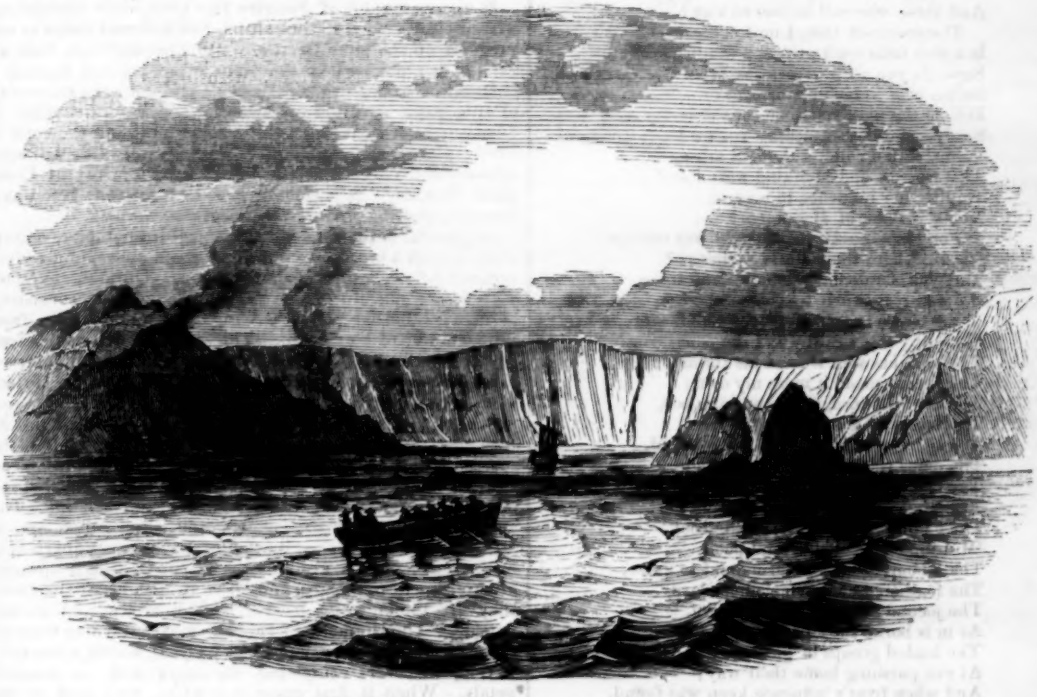
THE ISLAND OF AMSTERDAM, AND ITS BOILING SPRINGS.



THE ISLAND OF AMSTERDAM, IN THE SOUTH SEAS*

About 3500 miles to the eastward of the Cape of Good Hope, and in the midst of the great ocean which lies between the southern part of Africa and the continent of Australia, are the two small Islands of Amsterdam and St. Paul's, which appear as two little specks on the map of our globe. They are situated in the same meridian, one being seventeen miles to the north of the other. They were discovered in 1697 by Von Vlaming, a Dutch navigator, who named the northern one Amsterdam, and the southern one St. Paul's. Captain Cook adhered to this nomenclature, but most other English navigators have reversed it, calling the southern island Amsterdam, and the northern one St. Paul's. It is the southern island to which our remarks will be applied on the present occasion, and, in compliance with custom, we shall call it by the name of Amsterdam. It is the more remarkable of the two islands, and, indeed, one of the most remarkable in the world, being apparently a volcanic product, and still displaying one of the largest craters known.

For a long time after its discovery by Von Vlaming, this island was very seldom visited, but within the last fifty years ships have occasionally called at it in their passage to and from the East Indies, China, and Australia. Upon one occasion it underwent a tolerably minute examination; this was in 1793, when the *Lion* and *Hindostan*, which carried out Lord Macartney's embassy to China, visited it on their route to Canton. They anchored off its shores on the 1st of February in that year, and took their departure on the following day. The observations made upon the island in the interval were detailed by Sir George Staunton, in his *Authentic Account of the Embassy*, and by Sir John (then Mr.) Barrow, in his *Voyage to Cochin China*. The only inhabitants whom they found were a party of three Frenchmen and two Englishmen, who had taken up a temporary abode there, for the purpose of procuring a cargo of seal-skins for the Canton market.

The length of the island, from north to south, is about four miles and a quarter; its breadth, from east to west, about two miles and a half, and its circumference eleven miles; it has a surface of about eight square miles, or 5120 acres, almost the whole of which is covered with a fertile soil. The island is inaccessible, except on the eastern side, where a large volcanic crater forms a harbour. The tides run in and out of this harbour at the rate of three miles an hour, and are said to rise perpendicularly eight or nine feet on the full and change of the moon. The water in the crater is eight or ten fathoms deep, almost close to the edge; soundings in the middle of it gave a depth of 174 feet. The width of the breach, or of the channel through which the tide ebbs and flows, is about 200 feet. From the margins of this channel two rising banks, composed of volcanic fragments, are connected with the two sides of the breach, whose height is about 700 feet,

* This island must not be confounded with that called sometimes Amsterdam, but more generally Tongataboo, in the South Pacific Ocean.

which may be considered as the general height of the sides of the crater above the surface of the water which they enclose. The sides of the crater rise up very steep from the water, making an angle of 65° with the horizon. The longest diameter across the surface of the water, or to speak roughly, the length of the harbour, is about 1100 yards; and the shortest, or its breadth, about 850 yards. The circumference, by the water's edge, is about 3000 yards, or nearly a mile and three quarters. As the depth of the water was found to be 174 feet in the centre of the crater, the whole depth of the crater was estimated at nearly 900 feet. This harbour and its causeway are the only accessible parts of the island.

Every other part of the coast (says Sir John Barrow,) rises abruptly out of the sea, like the wall-sided island of Tristan da Cunha, exhibiting the successive strata of lava that have flowed down from the upper ridge of the great crater; and the rugged and blistered appearance sufficiently indicates the severe conflict that the two discordant elements must have sustained, when the liquid lava encountered the waves of the ocean.

In almost every part of the slanting sides of the crater, and in the causeway through which the sea has made the breach or opening thereto, were found hot springs, some running freely, and others oozing into a mere paste or mud. Fahrenheit's thermometer, which stood in the open air at 62°, on being immersed into one of these springs, ascended immediately to 196°; in another it rose to 204°; and in a third, on applying the bulb to a crevice, out of which a small stream issued, it rose in less than a minute to 212°, or the boiling point. On the causeway it was easy to reach a spring of boiling water by removing a few stones, wherever a steam was observed rising from among them. In several places were observed large patches of soft verdure, composed of a fine delicate moss, growing in great luxuriance; "out of these, as well, indeed, as from several fissures in the great funnel, issued a considerable quantity of smoke. A part of the moss being torn off, some thin hot mud was discovered, in which the bulb of the thermometer being inserted, the quicksilver ascended to the boiling point*.' Wherever the ear was applied to the ground, a bubbling noise like that of boiling water was heard.

Most of the springs (says Sir John Barrow) are rather brackish, but one in particular, on the side of the great crater, is strongly chalybeate, and the temperature only 112°. From the perusal of a paper in the twentieth volume of the *Philosophical Transactions*, we were prepared to meet with springs of boiling water; and on the strength of the information contained in the said paper, 'that the fish caught in the cold water might instantly be boiled in the hot,' we took care to provide ourselves with plenty of fishing-tackle. We caught great numbers of a red-coloured perch, from six inches to a foot in length, of most excellent flavour, which, with true epicurean want of feeling, we had the cruelty to drop living off the hook into the boiling springs, where it required just fifteen minutes to cook them in perfection. Whether it was owing to the novelty of the mode of preparation, or to long abstinence from good fish, or to the real intrinsic excellence of this species of perch, I am not able to decide, but the repast was universally pronounced to be delicious†.

Another species of perch, even superior to the red one, was also caught in great abundance; it measured from three to four feet in length, and had the body marked with six longitudinal stripes, alternately brown and white. The quantity of cray-fish that were seen crawling at low water on the bar, which runs across the entrance of the crater or harbour, is spoken of as "incredible;" and their voracity for dead carcasses was so great, that if one of the seals, of which there were always plenty lying on the causeway, was thrown in, they swarmed to it in such multitudes, that a boat-load might be picked up by the hand in a very short space of time. Even in the open sea, where the ships were lying at anchor, they seem to have been equally plentiful; for baskets let down into the water, with pieces of bacon or of sharks' flesh within them, were drawn up in a few minutes half full of cray-fish. Sir John Barrow says, that a whole shark, nearly eleven feet in length, was cut up as bait for the cray-fish; he mentions, also, the curious circumstance, that four young sharks were found alive in the stomach of the voracious animal, "but whether they had been devoured by the old one, or had voluntarily fled thither for protection, was a contested point amongst our medical men." Sharks and dog-fish of uncommon size, were in great abundance off this island, and it was thought surprising that other fish should be so numerous in the presence of these voracious animals.

Sir John Barrow tells us, that except on the coast of Spitzbergen, he never saw so vast an assemblage of whales, grampusses, porpoises, sea-lions, and seals, as were constantly either playing their gambols or fighting and devouring each other, between the ships' anchorage and the entrance of the crater. A fish, apparently a species of *delphinus*, or porpoise, was observed to attack the whale with great violence, whenever the latter ventured to heave his huge back out of the surface of the sea, lashing it with his tail and fins, the strokes of which the great monster seemed to have no means of repelling but by rolling round in the water. It was dangerous even for the boats to row among these large animals;—not only the sea, but the whole coast, in the mornings and evenings, swarmed with seals and sea-lions. In the account of the discovery of the island, it is stated that the people of Von Vlaming's ship "found the sea so full of seals and sea-lions, that they were obliged to kill them to get a passage through, when they steered for the shore." This statement might well be thought to border upon the marvellous; but, after the well-authenticated facts which we have detailed, it will not appear at all incredible, more especially when it is borne in mind, that the number of both seals and sea-lions is thought to have diminished, since the island has been frequented by vessels for the purpose of getting their skins.

The number of birds found here was very great,—the causeway was strewed with their eggs. Of the larger kind were several species of the albatross; a specimen of the brown one, carried on board one of the ships, weighed sixteen pounds, the expansion of its wings being nine feet. "The albatross finds a difficulty in raising itself on a sudden into the air, but is obliged to start from a precipice, or to run a considerable way upon the ground, in order to acquire an impetus sufficient to lift him on the wing."

The great black petrel is also common on the island; it is the enemy of the albatross, attacking him whenever it finds him on the wing, but quitting him as soon as he takes to the water, which is his constant refuge on such occasions*; but though

* Sir John Barrow also mentions these green patches "floating on a hot paste, whose temperature, at eight or ten inches below the surface upon which the roots of the plants spread, was 186°. This," he adds, "was the more remarkable, as the same species of *Lycopodium*, or club-moss, for such it was thought to be, grows with great luxuriance, even in the winter-season, on the bleak heaths of North Britain."

† "The basin," says Sir George Staunton, "abounded with tench, bream, and perch; and the same person who with a hook and line had caught some of these fish in the cold water of the basin, might with the same motion of his hand let them drop into the hot adjoining spring, where in fact they were boiled in the space of fifteen minutes, and fit for eating.

* Captain Cook mentions this mode of escaping from its enemies practised by the albatross. "Several large gray gulls," he says, "that were pursuing a white albatross, afforded us a diverting spec-

these petrels are fierce and voracious animals, one of them soon grew tame on board the *Lion*, eating quietly the food set before it, and taking great delight apparently in bathing in a tub of sea-water. The blue petrel, which is also common here, is much smaller, being about the size of a pigeon; it is the especial victim of the black petrel, which preys upon it more constantly than upon the albatross, devouring however only its heart and liver, and leaving the rest of its body untouched. They hide themselves under ground in the day-time, in order to escape if possible from their destroyer, and at night they venture abroad, whence they were termed by the people on the island night-birds. As they flock eagerly to a light, the seal-catchers used to attract them by torches, and kill multitudes of them for food. Another kind of petrel, the "stormy," as it is called, from being frequently seen on the ocean in bad weather, or, as the sailors have named it, "Mother Carey's chicken," is also observed here. Sir John Barrow mentions, too, a small brown duck, not much larger than a thrush, and apparently not described by naturalists, and a "silver bird," or sea-swallow.

The number of plants found on this island was very limited, both as to genus and species, though there was no want of verdure. They consisted chiefly of mosses and other genera of the cryptogamous class, and a few species of grasses, but not a single frutescent plant was found on the whole island.

It was curious enough to observe, (says Sir John Barrow,) that the greater part of the plants found on this new island were products of Europe; and the question was equally difficult of solution, how any plants, European or Indian, should first have been brought upon two little specks of land, situated in the middle of the ocean, half way between the coasts of New Holland and Madagascar, at the distance of two thousand English miles from the nearest shore. Were they borne on the wind, wafted by the waves, or carried by the fowls of the air, or were their rudiments, after lying for ages dormant in the bowels of the earth, thrown up, by the ageney of subterranean fire, into a situation favourable for vegetable life to burst forth? The mind of man, ever active in its inquiries, may be prompted to ask such questions, though without the hope of ever being furnished with a satisfactory solution. The natural historian, in contemplating facts like these, cannot fail, however, to be most forcibly impressed with the wise and benevolent designs of the great Author of the universe, which to him are apparent in all the works of the creation, and none more so than in the providential means he has thought fit to employ for the wide dissemination of plants.

During Sir John Barrow's stay, the gardeners of the embassy planted some potatoes and other vegetables, around the hut of the sealing-party whom they had found there. In the year 1820, when the ship *Clyde* visited the island, a Frenchman, with four slaves from the Mauritius, was found there engaged in the fishery; and he assured our countrymen, that, during the last two years, he had sent away annually 80,000 dried cod-fish. This man had grown cabbages, turnips, parsley, and other herbs in such quantity, that there were vegetables on the island "sufficient for the refreshment of many ships' crews."

It is also stated that this Frenchman had bred a great number of hogs, goats, and fowls; "many of the former were running wild about the island, so that there is no doubt that, in a short time, a ship touching at the island, will be able to procure a considerable addition to her live stock." Several years afterwards some wild hogs were seen upon the island, it being then uninhabited; but the only vegetable product observed was the long coarse grass.

tacle; they overtook it, notwithstanding the length of its wings, and they tried to attack it under the belly, that part being defenceless; the albatross had now no means of escaping but by dipping its body in the water; its formidable bill seemed to repel them."

The great volcanic crater is not the only one on the island. On the west and south-west sides are four small cones, regularly formed, with craters in their centres, in which the lava and other volcanic substances have every appearance of recent formation. The heat was still so great when Dr. Gillan (the physician to Lord Macartney's embassy,) examined them, and such a quantity of elastic vapours issued through numberless crevices, that there could be no doubt of their having been very lately in a state of eruption. Their surfaces were covered with ashes, the heat being too great to allow of vegetation. The ground felt tremulous under the feet; and the heat was so intense, that the foot could not be kept for a quarter of a minute in the same position without being scorched.

But the great crater on the eastern side, now full of water, (says Dr. Gillan,) is the largest here, or perhaps elsewhere, and is of an astonishing size,—considerably exceeding in diameter those of Etna or Vesuvius.

This vast crater, according to the usual method of computing the antiquity of volcanoes, must have been formed at a very remote period. The lava all around its sides is much decomposed, and has mouldered into dust, which lies on the surface in many parts to a considerable depth. The decomposition has supplied a rich soil for the long grass growing on the sides of the crater, and has even spread over most parts of the island. The fibrous roots of the grass, extending in all directions through the decomposed lava and volcanic ashes, and mixed, in a decaying state, with the vegetable mould, produced from the annual putrefaction of the leaves and stalks, have formed a layer of soil several feet deep all over the island; but as it has nothing except its own weight to compress it together, it is of a light spongy texture, with very little cohesion, and in many places furrowed and intersected by the Summer rains, and the torrents occasioned by the melting of the snow which lies upon it in the Winter, from three to four feet thick, in all those places where the subterraneous heat is not great enough to prevent its accumulation.

The soil of the island being thus everywhere light and spongy, and full of holes formed in it by the sea-birds for their nests, is unfavourable for walking; the foot breaks through the surface, and sinks deep at every step, and thus, although the distance across the island, from the edge of the great crater to the opposite or western side, is scarcely three miles, the journey is uncommonly troublesome and fatiguing.

The whole island appears (says Sir George Staunton,) in such a state of volcanic inflammation, that from the ships' decks at night were observed, upon the heights of the island, several fires issuing out of the crevices of the earth, more considerable, but in other respects resembling somewhat the nightly flames at Pietra Mala, in the mountains between Florence and Bologna, or those near Bradley, in Lancashire, occasioned by some of the coal-pits having taken fire. In the day nothing more than smoke could be perceived.

One of the Englishmen found upon the island at the visit of the *Lion* and *Hindostan*, gave a very unfavourable account of the weather during the Winter months. In the Summer months it was acknowledged to be very fine, easterly winds being uncommon, but the Winter was always boisterous, with hail and snow, and a great swell produced by winds blowing constantly from the north-west or south-west quarters. In those times he said a whirlwind was sometimes seen to sweep off the surface of the water in the crater, and to raise it in vast sheets to the very top of the surrounding sides, which we have already stated to be at least 700 feet in height. The small vessel which had conveyed him and his companions to the island, had remained at anchor or in the offing for eight weeks; during the whole of that period a boat was able to land only twice; and for forty days consecutively, the weather continued incessantly so very

boisterous, as to prevent all communication between the vessel and the shore.

The vessel which had conveyed these men to the island had been fitted out at the Mauritius; they had been left there to procure a cargo of 25,000 seal-skins for the Canton market; in the five months of their stay they had collected nearly 8000, and they hoped to get the rest in about ten months more. Their vessel was not expected to return before the lapse of that period, it having gone on another expedition to Nootka Sound, there to obtain a cargo of sea-otter skins, likewise for the China market.

The seal-skins which they were collecting, were worth at Canton from one to three dollars each, according to the quality and the temporary demand for them. The seals make their appearance on the shores of the island principally in the Summer season, when they advance in droves of from eight hundred to one thousand. In general they are not shy, but sometimes they plunge back instantly into the water at the sight of a man, and at others they rear themselves up into a menacing posture, and bark upon the rocks until struck down. They are generally killed while basking in the sun, a blow on the nose with a stick being sufficient to despatch them. Their carcasses are left to putrefy before the skin is taken off; and in the excursions which our countrymen made on shore from the ships of Lord Macartney's embassy, these disgusting objects were found scattered about the island, producing an intolerable stench. The adventurers whom they found engaged in this occupation, used to be content if they could capture an hundred seals a day, that being as large a number as five men could manage; they were accustomed, also to collect some of the oil yielded by the seals, and to use it in the stead of butter. It was remarkable, that the proportion of female to male seals which went ashore, exceeded that of thirty to one. In Winter, these animals keep in deep water and amongst the weeds, which seem to afford them shelter, while great numbers of sea-lions, some eighteen feet long, crawl out of the water and take their place upon the causeway, making a prodigious howling noise. Even the hollow mournful cry of the seals was distinctly heard at the anchorage of the Lion and Hindostan, at the distance of a mile from the shore.

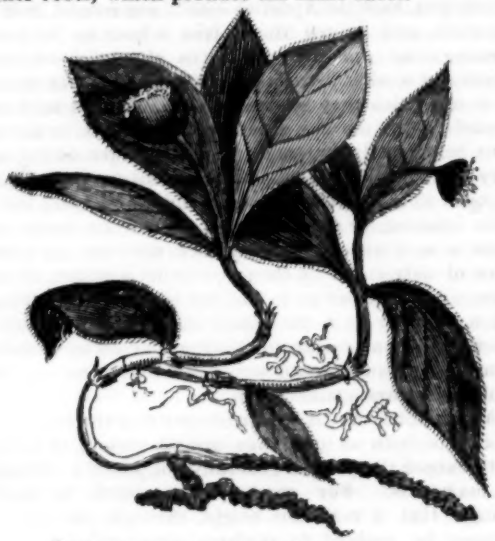
The situation of this island, the abundance of fish on its shores, and the fertility of its soil, have led to the suggestion that it might be rendered a place of refreshment for ships bound to China, the East Indies, Australia, and Van Diemen's Land. The great obstacle to such an arrangement is the want of good water on the island. As a fishing station it might in all probability be valuable.

[For much of our information on this subject, especially that of comparatively recent date, we are indebted to the private journal of Captain Mangles, R.N.]

TREES AND PLANTS USED IN MEDICINE.

II. Ipecacuanha.

For nearly a century, the root of the plant called Ipecacuanha was employed in medicine, before the medical world were acquainted with the botanical character of the herb itself. It is now known to be produced from the plant figured in the engraving, which is perennial, a native of Brazil, and found in moist situations in the provinces of Rio Janeiro, Marianna, Pernambuqua, &c. It is found in the woods, and flowers from November to March. The plant seldom bears more leaves at a time than those which grow at the summit of each stem, the inferior leaves falling off very soon after the production of those above them. Its name appears in South America to mean, simply, vomiting-root, and it is applied by the natives indiscriminately to many other roots, which produce the same effect.



Ipecacuanha, (*Cephaelis ipecacuanha.*)

The appearance of this medicament varies much in colour, the principal varieties being ash-coloured, brown, and white. The active principle of the root is much more powerful in the soft outer part, than in the harder woody substance in the centre, the difference being as much as sixteen to one. The brown and white varieties are brought to Europe from Rio Janeiro, while a black sort, a native of Peru, is exported from Carthagena to Cadiz.

"Experience," says Dr. Woodville, "has proved ipecacuanha to be the mildest and safest emetic with which we are acquainted."

The product of this root, on which its medical properties depend, is called *emetine*, and has been separated from the root itself by modern chemists.

Emetine is sold in the shops in two states, as reddish-brown scales, and as a white powder. The brown sort is not perfectly purified, and when exposed to damp air, becomes liquid. The white sort is pure emetine, it is in the form of an impalpable white powder, and insoluble in water; a dose of one-sixth of a grain of this last, is equal to a quarter of a grain of the brown sort; although it will not mix with water, it is readily dissolved by spirits of wine, or ether.

Like most of our active medicines, emetine, if incautiously used, acts as a virulent poison. Even in dogs and cats, to the extent of from one-half a grain to two or three grains, it produces vomiting, sometimes followed by long-protracted sleep; but when administered to a greater extent, the stupor produced by it generally ends in death in the course of four-and-twenty hours, the cause of death being violent internal inflammation. Emetine acts in the same manner on man as it does on the inferior animals, and in extreme doses produces the worst results. From this, it is clear, that it never ought to be employed without great caution.

The preparations of this medicine are the lozenges and the syrup.

A calm at sea resembles that artificial sleep which is produced by opium in an ardent fever: the disease is suspended, but no good is derived from it.—Denon.

EASY LESSONS ON CHRISTIAN EVIDENCES.

No. VII.

Wonders, and Signs.

It is plain, for the reasons which have been put before you, that the Apostles must have roused men's attention, and gained themselves a hearing, by performing,—as our books tells us they did,—many wonderful works. And these works, as well as those of Jesus which they related, must have been such as to admit of no mistake either about the facts, or about their being really supernatural. Else, surrounded as they were by enemies, and with men's prejudices opposed to them, it seems impossible they could have been believed, or even attended to. If, for instance, there were a report of some sick men having been miraculously cured by them, but such a report as to leave a doubt either as to the *fact* of the cure having taken place, or as to the *manner* of the cure,—that is, whether the man might not have recovered by natural means,—any such doubt would have been enough to shut men's ears against them.

And besides this, it was necessary that the miracles should be both so numerous, and so various in kind, as to exceed the powers generally supposed to belong to magicians. For most persons seem to have thought that a magician might, through the aid of demons, be enabled to perform *some* miracles, and not others of a different kind. We find it related accordingly, that Jesus not only healed the lame, and blind, and sick, some present and some absent, grown persons and children, but also raised the dead, fed a multitude with a few loaves, stilled the waves and winds at his bidding, blasted a tree at his word, changed water into wine, &c. And this seems to have been no more than a necessary condescension to the weakness of men's minds in those days. They did not at once conclude that He must be a true prophet from his working *one* miracle; but said, "When [the] Christ cometh, will he do *more* miracles than these which this man doeth?" (John vii. 31.) So, also, Nicodemus says, not "No man can do *any* miracles," but, "No man can do *these* miracles which thou doest, except God be with him." (John iii. 2.) And the disciples, who had witnessed so many miraculous cures, were astonished, we are told, at finding that Jesus had a command over the storm: "What manner of man is this, that even the winds and the sea obey him?" (Matt. viii. 27.)

And we find the same variety also in the miraculous gifts possessed by the Apostles, and bestowed by them on other Christians: (as you may see in 1 Cor. xii., and elsewhere.) You should observe too, that it would not have satisfied men's minds merely to see some extraordinary occurrence, unless it were also something plainly *done* by the Apostles, as a *sign*, testifying that they were divine messengers. It would have been impossible for them, in the midst of adversaries, to take advantage of some remarkable event, calling it a miracle, and to explain it so as to favour their own pretensions.

This has often been done, indeed, in support of some religion, or some doctrine, which men already believe, or are inclined to believe. The pagans were, many of them, ready enough to attribute anything wonderful to a miraculous interference of Jupiter or some of their other gods. And so, also, Mohammed easily persuaded his followers that some of his victories were miraculous, and that God sent angels to fight for him. He was a great warrior; and his followers being full of enthusiasm, and eager for conquest, glory, and plunder, often defeated a very superior force of their enemies, and gained victories, which may be rightly called wonderful: though not more wonderful than several which have been gained by others. It is not strange, therefore, that Mohammed should easily have persuaded them that their victories were miraculous, and were a proof that God was on their side.

In all times, indeed, men are to be found who call any extraordinary event miraculous, and interpret it so as to favour their own views and prejudices. If a man's life is preserved from shipwreck, or any other danger, in a remarkable manner, many people speak of it as a miraculous escape. Or if a man loses his life in a remarkable manner, or a plot is discovered by some curious train of circumstances, or, in short, if any extraordinary event takes place, there are persons who at once call it a miraculous interference, and a sign of the Divine favour or displeasure towards some of the parties concerned.

And you may often find men of opposite opinions putting opposite interpretations on the same event. This was the case when that curious meteor, called the "Northern Lights," was first observed in England, which was about the beginning of the last century; for it is a very curious fact, that, though it has often been seen *since*, (particularly in 1836,) it is not recorded ever to have been seen in the British Islands before that time. On its first appearing, people were greatly astonished and alarmed, at an appearance which seemed out of the course of nature; and many declared that it was a supernatural sign, and that it portended such and such events; each giving a different interpretation, according to his own particular prejudices. But people of sense saw that it was no sign at all, because there was no one who had either any authority to declare, or any power to know, what it was a sign of.

But it is very rash to pronounce in this manner as to any remarkable event that occurs. And it is not only rash, but uncharitable also, to pronounce that sudden death, or any extraordinary affliction that befalls any one, is a miraculous divine judgment upon him. This is what the people of Melita did in respect of St. Paul, when they saw the viper fasten on his hand, and concluded that he must be a murderer pursued by the divine vengeance. (Acts xxviii. 3, 4.) This uncharitable rashness is censured by our Lord in Luke xiii. 2, 3. The people of Melita were ignorant Pagans: but we of these days ought to know better. You may easily perceive, on reflection, that a mere *wonderful occurrence*, of itself *proves* nothing; but when a man *does* something that is beyond human power to do, or *foretells* something beyond human foresight, and makes this a testimony of his coming from God, it is then, and then only, that he is properly said to offer a miraculous proof. And accordingly the works performed by Jesus and his Apostles are called in Scripture, (as they really were,) not merely *Miracles*, (that is, *wonders*,) but *Signs*; that is, miraculous *evidence*. (Mark xvi. 20.)

For instance, that a violent storm should suddenly cease, and be succeeded by a complete calm, is something extraordinary; but of itself proves nothing. But when the disciples heard Jesus give his command, and rebuke the wind and waves, which immediately became still, they justly regarded this as a *sign* that God was with Him. (Matt. viii. 26.) So also, that a person seemingly dead should suddenly revive and rise up, is indeed a wonderful event; but, of itself, is merely a wonder. But when Jesus told the child of Jairus, (Luke viii. 54,) and the widow's son of Nain, (Luke vii. 14,) to rise up, and each of them did so at his word, these became proofs of his divine mission. These were among the "works," which,

as He said, "bore *witness* of Him." Again, if any one who is opposing some particular religious sect or system, should suddenly lose his eyesight, it would be very presumptuous to pronounce at once that he was struck blind as a divine judgment. But when St. Paul rebuked Elymas, and declared that the hand of the Lord was upon him, and that he should become blind, and immediately a darkness did fall upon him (Acts xiii. 10, 11), the Roman governor justly regarded this as a *sign*; and believed accordingly in what Paul was teaching.

Anything wonderful, in short, is then (and then only) a miraculous Sign, when some one *performs* or *foretells* it, in a manner surpassing human power, so as to make it *attest* the truth of what he says. And this may fairly be required of any one professing to be a messenger from Heaven. For if a stranger were to come to you, professing to bring a message from some friend of yours, you would naturally expect him to show you that friend's hand-writing, or some other such *token*, to prove that he really was so sent. And so, also, when a man comes to this country as an ambassador from some other country, he is required first to produce his "*credentials*," as they are called; that is, papers which prove that he is no impostor, but is really commissioned as an ambassador. And it is equally right that men professing to bring a message immediately from God, should be required to show what may be called their "*credentials*;" that is, such miraculous powers as God alone could have bestowed, as a sign or token, to prove the reality of their divine commission.

But credulous and superstitious people often overlook this rule, and are ready to interpret as a miraculous sign any remarkable occurrence, such as a victory, or a famine, or a thunder-storm, or a sudden recovery from sickness, or the like, when these are so explained as to favour, or at least not oppose, their prejudices, and the religious belief they are already inclined to. But the Apostles found no such prejudices in their favour. They would never have been allowed to explain in their own way anything strange that might happen. On the contrary, all the superstitious credulity of the people was opposed to them. And instead of men's being ready to cry "miracle!" when anything extraordinary occurred, and to interpret it in favour of Christianity, the Apostles found the most credulous men disposed rather to attribute the Christian miracles to magic.

In order to gain converts, therefore, or even to obtain a hearing, they must have shown (as our books tell us they did) many mighty works, evidently performed by them, as "the Signs of an Apostle."

The first object of education is to train up an immortal soul. The second (but second at an immeasurable distance,) is, to do this in a manner most conducive to human happiness; never sacrificing either the interests of the future world to those of the present, or the welfare of the man to the inclinations of the child; errors not dissimilar in complexion, though so awfully different in the importance of their results.—Mrs. Trench *on Education.*

Be very careful to speak truth; and beware of lying. As lying is displeasing to God, so is it offensive to man; and always at the latter end returns to the reproach and disadvantage of him that useth it; it is an evidence of a weak and unmanly mind. Be careful that you believe not hastily strange news, and strange stories; and be much more careful that you do not report them, though at the second hand; for if it prove an untruth, (as commonly strange stories prove so,) it brings an imputation of levity upon him that reports it, and possibly some disadvantage to others.—Sir Matthew Hale.

A REPUBLIC OF PRAIRIE DOGS.

On returning from an expedition, I learned that a great burrow, or, village, as it is termed, of Prairie Dogs, had been discovered on the level summit of a hill, about a mile from the camp. Late in the afternoon I set out with a companion to visit it. The Prairie Dog is a little animal of the coney kind, about the size of a rabbit, of a sprightly nature, quick, sensitive, mercurial, and somewhat petulant. He is very gregarious, living in large communities, sometimes of several acres in extent, where the well-beaten tracks show the constant mobility and restlessness of the inhabitants. They seem, in fact, continually full of sport, business, and public affairs; whisking about hither and thither, as if on visits to each other's holes; congregating in the open air, and gambolling together in the cool evenings after showers. Sometimes they pass half the night in revelry, barking and yelping with weak tones, like very young puppies; but on the least alarm they all vanish into their cells, and the village remains blank and silent. Should they be surprised, and have no means of escape, they assume a pugnacious air, and a most whimsical look of impotent wrath and defiance.

The Prairie Dogs are not, however, the sole inhabitants of these villages. Owls and rattlesnakes are said to take up their abode with them; but whether invited guests or unwelcome intruders, is a matter of controversy. The owls are of a peculiar kind, more alert in their looks, tall on their legs, and rapid in flight, than the ordinary species, and a bird that sallies forth in broad day. Some say they only inhabit the ruined habitations of the Prairie Dogs, which the latter have deserted, in consequence of the death of some relatives; for, it would seem that the sensibilities of these very singular little dogs will not permit them to remain in a dwelling in which they have lost a friend. Others affirm that the owl is a kind of housekeeper to the Prairie dog, and, from having a note very similar, it is even insinuated that it teaches the young litter to bark, being employed as a family preceptor. As to the rattlesnake, nothing satisfactory has been learnt of the part he takes in the domestic economy of this most interesting household. Some insinuate that he is a mere sycophant and sharper, and takes in the honest, credulous little Prairie Dogs most sadly: certain it is, that from being now and then detected with one of the young ones of the family in his maw, he evidently solaces himself in private with more than the usual pequisites of a toad-eater.

The accounts I had received of these social and politic little animals made me approach the village with great interest. Unfortunately it had been visited in the course of the day by some of the rangers, who had even shot two or three of the citizens. The whole community, therefore, was outraged and incensed; sentinels seem to have been posted on the outskirts. On our approach, there appeared to be a scampering in of the picket-guards to give the alarm; whereupon, the wary citizens who were seated at the entrances to their holes, gave each a short yelp, or bark, and dived into the earth, his heels twinkling in the air as he descended, as if he had thrown a somerset.

We traversed the whole village, which covered an area of about thirty acres. Not a single inhabitant was to be seen. There were innumerable holes, each having a small hillock of earth about it, thrown out by the little animal in burrowing: these holes were empty as far as we could prove them with the ramrods of our rifles; nor could we unearth either dog, or owl, or rattlesnake. Moving off quietly to a

little distance, we lay down upon the ground, and watched for a long time silent and motionless. By degrees, some cautious old citizen near at hand, would put forth the end of his nose, but instantly withdraw it. Others further off would emerge entirely, but taking a glance of us, would throw a somerset, and dive back into their holes. At length, the inhabitants of the opposite side of the village, taking courage from the continued stillness, would steal forth and hurry off to a distant hole, as if to the residence of some relative or gossiping friend, where they might compare notes on the late occurrences. Others, still more bold, assembled in little knots in the streets and public places, to discuss the recent outrages offered to the commonwealth, and the atrocious murders of their fellow-citizens. We rose from the ground to reconnoitre them more distinctly, when yelp! yelp! yelp! passed from mouth to mouth. There was a sudden dispersal. We caught glimpses of twinkling feet in every direction, and in an instant all had vanished into the earth.

The dusk of the evening put an end to our observations; but late in the night, after our return to the camp, we could hear a faint clamour from the distant village, as if some of the inhabitants were lamenting in general assemblage some great personage that had fallen in their commonwealth.—WASHINGTON IRVING'S *Tour on the Prairies.*

LIFE has been called a parenthesis between our birth and death; the history of the human race is but a parenthesis between two cataclysms of the globe, which it inhabits; time itself only a parenthesis in eternity.—*The Doctor.*

NEXT to enjoying happiness ourselves is the consciousness of having bestowed it on others. But the indiscriminate profusion that would glut avarice or supply prodigality, neither does good, nor is rewarded by gratitude.—SIR WALTER SCOTT.

THE slanderer does harm to three persons at once; to him of whom he says the ill, to him to whom he says it, and most of all, to himself in saying it.—ST. BASIL; *Book of the Fathers.*

ALL prudent and affectionate parents must feel the incalculable advantage of being the companions of their children, to the utmost limit their situations will admit; and they will consider morals, discretion, and piety, as the most valuable qualities the attendants or instructors of youth, or infancy, can possess. Always preferring a moderate degree of skill, with a high tone of principle, to the most useful or acceptable talents, divested of this firm foundation. But, instead of prohibiting the young from speaking to servants, we should rather accustom them, occasionally, to give our orders, to make inquiries, and to confer favours, which will prevent them from performing such offices, in their maturity, with stiffness and embarrassment. We should also lead them to visit the cottage and the workshop. This will enable them hereafter to know the real wants of the poor, as well as to relieve them, with that well-judging charity which is "twice blessed," and will guard them against that morbid sensibility, which shrinks from the very idea of the indispensable gradations of society. We know how successfully this was practised, in the education of one in the highest rank: that beloved one, "the first in virtue as in place," who has left us the inheritance of an example, over which her early death, and sublimely simple resignation of "a high and palmy state" of happiness, that realized the dreams of fiction, seem to have thrown an added brightness; like those light clouds which sometimes hang on the moon, and, instead of diminishing, reflect and diffuse, and even seem to increase its original lustre. We have seen her visiting the cottages in Bognor, and leaving, together with some judicious gift, that remembrance of her kindliness and courtesy, which gave more than "an hour's importance to the poor man's heart," a pure and indelible satisfaction.—*Thoughts of a Parent on Education,* by MRS. TRENCH.

THE HOUSE I LIVE IN.

No. III.

THE ARMS.

THESE are not posts, for, in their natural position, they support nothing, nor are they braces, for they strengthen no part of the frame. They are properly *appendages*, but they are most convenient ones; and though they can be removed without destroying the building, their loss very much injures it. They seem to answer, in a great degree, the purposes of stairs, ladders, tackles, pulleys, and other machinery for raising things from the ground, and conveying them to the upper part of a building. These appendages—we may as well at once call them the Arms and Hands—however, answer a much better purpose than any of these.

The arm and hand, taken together, constitute a most wonderful apparatus for motion. The particular structure of the joints, as well as the peculiarities of the hand, must be reserved for another place; we will say a little about the arm.

The bones of the arm have a general resemblance to those of the leg. The upper part consists of only one bone, which is long and round, and is called the *humerus*. It is fastened above to the *scapula*: below, at the elbow, it is connected to the two bones of the lower half of the arm, by a joint like a hinge, and by ligaments, or straps, which extend from near the lower end of the upper bone to the topmost end of the others. The largest of the two latter bones is called the *ulna*, which is a Latin word for cubit, because the arm, below the elbow, is usually considered about a cubit in length. The smaller one is called the *radius*, or spoke, from its supposed resemblance to the spoke of a wheel. It is the bone from the elbow, on a line with the thumb.

The connexion at the shoulder is such, that the arm can be moved in almost every conceivable direction. The elbow-joint only admits of one sort of motion, namely, forward and backward, like a door on its hinges; but the connexion of the *radius*, or smaller bone of the arm, with the *ulna*, or larger one, is such that it more than makes up this deficiency. The upper end of the *radius* having a rotary motion in a depression of the *ulna*, allows the hand to be placed with each of its surfaces upwards with equal facility. These motions are usually designated by the term *pronation*, when the palm of the hand is downwards, and *supination*, when the palm of the hand is upwards. Then the wrist, consisting, as it does, of eight bones, all moveable, and being so connected with the lower bones of the arm as to admit of very free motion, renders the arm a most important instrument for all human operations either of delicacy or power. It will perform movements as various and as rapid as the trunk of the elephant; and would doubtless, were it not so common, excite as much surprise.

It was said that this whole member could be torn off without destroying the building. Cheselden, an eminent anatomist, relates that a miller had the whole arm, shoulder-blade and all, torn off, and yet his life was not injured. The great danger, in such cases, is from bleeding: but *torn* blood-vessels do not bleed so freely as those which are *cut*.

THE HAND.

THIS extremity of the arm is by far the most curious part of it. Indeed, I do not know that there is a greater curiosity in nature than this same human hand. Yet, who thinks much about it?

The truth is, many of the best, as well as the most curious objects in the world, are neglected in the

same manner. Think of the thousand uses of *water*. What living thing could exist without it? Yet do we think much of all this, or are we even thankful for so valuable a gift?

THE HAND.

THE FOOT.

The bones represented in the engraving are those of the left hand; and you look upon the top or upper side of it. The foot is also inserted here, in the same position, but this has been already described. The whole hand and wrist contain twenty-seven bones; nineteen in the former, and eight in the latter. The bones in the hand have a general resemblance, though some are much longer than others. The four longest, opposite to figure 1, support the palm of the hand, and are joined at one end to the wrist bones, and at the other to the first joint of the fingers. The junction of these bones is effected, as are all the other joints of the body, by means of cartilaginous tips, which allow of free motion, and are strongly secured by ligaments. This series is called the *metacarpal* bones.

The bones of the wrist are called the *carpal* bones. They are situated between the *ulna* (5) and the *radius* (6) at the one end, and the *metacarpal* bones and the first bone of the thumb on the other. They are wedged together, like the stones of a pavement, only not quite so firmly; each bone being tipped with cartilage, and sustained by strong ligaments, which unite it to its fellows. The bony structure of the wrist is of an arch-like form, with the convexity corresponding to the upper part of the hand. This configuration creates both additional strength and flexibility.

The first four bones of the fingers, opposite figure 2, are the longest. Those opposite 3 are shorter; the last, or those marked 4, are shorter still. The thumb has one bone less than the fingers. All the joints of the hand—and there are fourteen, besides the wrist—are hinge-joints, and the ends of the bones are made a little like some of our door hinges, but they bend in one direction only. Where the fingers join to the metacarpal bones, there is much more freedom of motion than at the hinge-like finger joints, but the joint at the wrist admits of motion very freely in every direction.

When the bones of the hand are not quite so naked as they appear in the engraving, but are dressed up with muscles, tendons, membranes, nerves, arteries, and veins, and furnished with skin, and nails, in a manner which I cannot now describe, the whole presents a most beautiful appearance. Beautiful and useful as it is, however, and placed before our eyes from the time we see the light till we sleep in death, there are few things in the whole visible world, of which not only young persons, but adults also, are so ignorant!

So important is the human hand, as a member of the system, that Sir Charles Bell's *Bridgewater Treatise*—a pretty large volume—is wholly devoted to a description of it. I will make a short extract from that admirable work.

The difference in the length of the fingers serves a thousand purposes, adapting the hand and fingers, as in holding a rod, a switch, a sword, a hammer, a pen or pencil, engraving-tool, &c., in all which a secure hold and freedom of motion are admirably combined. Nothing is more remarkable than the manner in which the delicate and moving apparatus of the palm and fingers is guarded. The power with which the hand grasps, as when a sailor lays hold to raise his body to the rigging, would be too great for the texture of mere tendons, nerves, and vessels; they would be crushed, were not every part that bears the pressure defended with a cushion of fat, as elastic as that in the foot of the horse and the camel. To add to this, there is a muscle which runs across the palm of the hand, and supports the cushion on the inner edge. It is this muscle which, raising the inner edge of the palm, forms the drinking cup of Diogenes.

USES OF THE HAND.

Small as this member of the frame is, it is a part of the utmost consequence. Without hands, the farmer could not sow his corn, or collect it when ripe; nor, if it were grown, could the miller grind it, nor the baker make it into bread. Neither could we raise anything to eat in its stead. You may say that if we could get nothing else to eat, we might then kill and eat animals. But how could we catch them?

"But," you may say, "this is exaggeration, we should not be such entirely helpless creatures as you describe. There is a story I have seen, about a French woman, who was without hands, and yet she could do a great many sorts of work, and even *write*, *draw*, and *sew*." Yes, and the story was undoubtedly true. I have heard stories like it before. I have heard of a man, in the same condition, who could write with his *breast*. His pen was fastened to a girdle, and then he could dip it in the ink, and write very well with it.

But these are extraordinary cases, in which Nature is permitted, for some reason which we cannot divine, to depart from her established laws. Such occurrences, however, no more prove that people, constituted as we are, could live upon this earth without the aid of their hands, than does the existence of one afflicted with blindness, that all could flourish without the use of their eye-sight. The individuals already mentioned could not have made for themselves the pens and pencils to write and draw with, or the needles to sew with, nor could the man have placed the pen in his girdle; and there are a thousand other things which they could not do.

The human tongue is spoken of by an inspired writer as being a "little member," yet boasting great things. So this member of the frame which we are speaking of is a "little" affair, but great things depend upon it. It is a sort of connecting link, that serves to bind the human soul to the habitation it occupies, for a few years, rarely reaching to a hundred. Without it, or neglecting to use it, our lives must soon terminate. "He that would not work, neither should he eat," is a divine law; and we could not work much without the aid of this beautiful piece of mechanism, the HUMAN HAND.

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